



# UNITED STATES PATENT AND TRADEMARK OFFICE

*[Signature]*  
UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/625,869	07/23/2003	Nicholas Lawrence Abbott	032026-0736	8011
23524 7590 03/22/2007 FOLEY & LARDNER LLP 150 EAST GILMAN STREET P.O. BOX 1497 MADISON, WI 53701-1497			EXAMINER LUNDGREN, JEFFREY S	
			ART UNIT	PAPER NUMBER
			1639	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/22/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/625,869	<b>Applicant(s)</b> ABBOTT ET AL.	
	<b>Examiner</b> Jeff Lundgren	<b>Art Unit</b> 1639	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 20 October 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION*****Request for Continued Examination and Status of Claims***

A Request for Continued Examination under 37 CFR § 1.114, including the fee set forth in 37 CFR § 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR § 1.114, and the fee set forth in 37 CFR § 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR § 1.114. Applicant's submission filed on October 20, 2006, has been entered.

Claims 1-20 are pending in the instant application.

***Withdrawn Claim Rejections - 35 USC § 103***

All previous rejections made under 35 U.S.C. § 103 have been withdrawn for the reasons argue by Applicants.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-20 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, and all dependent claims, are indefinite for reciting the phrases "biochemical blocking compound" and "biochemical blocking layer" because one of ordinary skill in the art could not reasonably determine the metes and bounds of these limitations. The phrases are neither art-specific nor defined in the specification; the phrases are generic and do not allow one to distinguish between compositions that are "biochemical" and serve the purpose of "blocking." Furthermore, it is not clear if the compound/layer is of biochemical origin, or if the compound/layer blocks molecules of biochemical origin.

Claim 1, and all dependent claims, are indefinite for reciting the term "biochemical" because one of ordinary skill in the art could not reasonably determine the metes and bounds of

Art Unit: 1639

this limitation. The term "biochemical" while being an art-accepted term, has a range of meanings, none of which clearly define a class of chemicals having a common core, structure or genus. The specification also does not define this term, and only lists a limited number of examples (see paragraph 0063). For example, one of ordinary skill in the art could reasonably argue that a synthetic oligopeptides of 20 amino acids having a man-made sequence is a biochemical because it comprises amino acids residues bound via peptide bonds, while another person of ordinary skill in the art could just as reasonably argue that it is not a biochemical because it has no biological origin. Molecules such as CO<sub>2</sub>, steroids, and phospholipids, also may or may not be considered biochemicals.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 4, 6, 7 and 14-20, are rejected under 35 U.S.C. § 102(e) as being anticipated by Abbott *et al.*, U.S. Patent No. 6,284,197 B1, issued on September 4, 2001.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. § 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR § 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR § 1.131.

Abbott discloses a device and methods for detecting analytes (see e.g. Abstract; col. 1, lines 22-27; col. 5, lines 13-59; col. 6, lines 54-65; col. 13, lines 4-31; col. 14, lines 6-32). In general, the device is multilayered and comprises one or more substrates, an organic layer, a

Art Unit: 1639

recognition moiety, and a mesogenic layer (see col. 5, lines 13-59; col. 13, lines 4-31; col. 14, lines 6-32). The substrate includes materials such as glass or organic polymers (see col. 6, lines 54-65; col. 14, line 45 thru col. 15, line 10; col. 15, line 59 thru col. 16, line 14; and Fig. 2).

The surface of the substrate disclosed by Abbott is patterned with features such as grooves and ridges with emphasis on the texture:

*"The nature of the surface of the substrate has a profound effect on the anchoring of the mesogenic layer which is associated with the surface. The surface can be engineered by the use of mechanical and/or chemical techniques. The surface of each of the above enumerated substrates can be substantially smooth. Alternatively, the surface can be roughened or patterned by rubbing, etching, grooving, stretching, oblique deposition or other similar techniques known to those of skill in the art. Of particular relevance is the texture of the surface which is in contact with the mesogenic compounds."*

Abbott, col. 16, lines 47-57 (emphasis added).

Abbott generally identifies certain techniques for creating these features:

*"The size and complexity of the pattern on the substrate is limited only by the resolution of the technique utilized and the purpose for which the pattern is intended. For example, using microcontact printing, features as small as 200 nm have been layered onto a substrate. See, Xia, Y.; Whitesides, G., J. Am. Chem. Soc. 117:3274-75 (1995). Similarly, using photolithography, patterns with features as small as 1  $\mu$ m have been produced. See, Hickman et al., J. Vac. Sci. Technol. 12:607-16(1994). Patterns which are useful in the present invention include those which comprise features such as wells, enclosures, partitions, recesses, inlets, outlets, channels, troughs, diffraction gratings and the like."*

Abbott, col. 17, lines 7-18 (emphasis added).

Regarding the blocking layer, Abbott discloses the use of a mixed SAM wherein certain SAM components have blocking groups, such as  $\text{CF}_3$  that blocks nonspecific binding (see Example 6; see also Figs. 23 and 24, and description thereof). The organic layer (refers to instant claimed blocking layer) comprises monolayers, bilayers, and multilayers such as self-assembled monolayers (see e.g. col. 17, line 62 thru col. 18, line 4; col. 19, line 19 thru col. 20, line 3), and the organic layer surface activity, i.e., binding characteristics, is altered by attaching a monovalent moiety (refers to the functional limitation of the blocking layer, i.e., block

Art Unit: 1639

nonspecific adsorption of pathogens to the surface)(see e.g. col. 25, lines 41-56). More specifically, Abbott teaches:

“Thus, in one preferred embodiment, the substrate is glass or an organic polymer and *the surface has been prepared by rubbing. Rubbing can be accomplished using virtually any material including tissues, paper, brushes, polishing paste, etc. In a preferred embodiment, the rubbing is accomplished by use of a diamond rubbing paste.* In another preferred embodiment, the face of the substrate that contacts the mesogenic compounds is a metal layer that has been obliquely deposited by evaporation. In a further preferred embodiment, the metal layer is a gold layer.”

Abbott, col. 16, line 58-67 (emphasis added); and:

“In addition to the ability of a substrate to anchor a mesogenic layer, an organic layer attached to the substrate is similarly able to provide such anchoring. A wide range of organic layers can be used in conjunction with the present invention. These include organic layers formed from organothiols, organosilanes, *amphiphilic molecules, cyclodextrins, polyols* (e.g., *poly(ethyleneglycol), poly(propyleneglycol)*, fullerenes, and *biomolecules*. Other useful compounds will be apparent to those of skill in the art.”

Abbott, col. 17, line 62 through col. 18, line 3 (emphasis added).

As in claim 2, Abbott teaches depositing the biomolecule on a rubbed surface (see above). As in claim 4, Abbott teaches a support comprising a biochemical blocking layer that are crosslinked (*i.e.*, the polysilanes forms part of the blocking layer; paragraph bridging cols. 15 and 16). As in claims 6 and 7, Abbott teaches the spacer (col. 25, lines 8-56). As in claims 14 and 15, Abbott teaches glass and silica (see above; and section titled, *B.3 Functionalized SAMs*). As in claim 16, Abbott teaches a antibody recognition agent (see Figure 3F and description thereof). As in claim 17, Abbott teaches the preferred arrangement (see above). As in claim 18, Abbott teaches 4-cyano-4'-pentylbiphenyl (col. 32, lines 7-10). As in claims 19 and 20, Abbott teaches an optical cell (see Figure 3 and description thereof).

### ***Double Patenting Rejection Maintained***

The rejection of claims 1, 8, 9, 11, 12, 16, and 20 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 8-10, and 14 of copending Application No. 10/934,023, is maintained for the reasons of record. Although the

Art Unit: 1639

conflicting claims are not identical, they are not patentably distinct from each other because the claimed device of has overlapping scope since the device of copending Application No. 10/934,023 the instant application is generic to the device of the presently claimed device of copending Application No. 10/934,023, or in other words, claims 1, 8, 9, 11, 12, 16, and 20 are anticipated by claims 1, 8-10, and 14 of copending Application No. 10/934,023. Specifically, the structural features of both devices are a multilayered support comprising a biochemical blocking layer, a binding agent, and a liquid crystal compound. Thus, the examined claims would have been obvious over the claims of copending Application No. 10/934,023.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Conclusions***

No claim is allowable.

If Applicants should amendment the claims, a complete and responsive reply will clearly identify where support can be found in the disclosure for each amendment. Applicants should point to the page and line numbers of the application corresponding to each amendment, and provide any statements that might help to identify support for the claimed invention (*e.g.*, if the amendment is not supported *in ipsiis verbis*, clarification on the record may be helpful). Should Applicants present new claims, Applicants should clearly identify where support can be found in the disclosure.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Jeff Lundgren whose telephone number is 571-272-5541. The Examiner can normally be reached from 7:00 AM to 5:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, James Schultz, can be reached on 571-272-0763. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

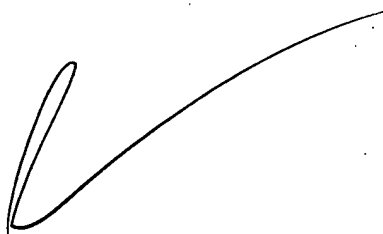
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

Art Unit: 1639

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JSL

JON EPPERSON  
PRIMARY EXAMINER

A handwritten signature in black ink, consisting of a large, stylized 'J' followed by a long, sweeping horizontal stroke that curves upwards at the end.